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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/531,285 03/20/00 CHEN

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EXAMINER

MM91/0420

ATTENTION H SANDERS GWIN
3M OFFICE OF INTELLECTUAL PROPERTY COUN
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VIGUSHIN, J

ART UNIT

PAPER NUMBER

2841

DATE MAILED:

04/20/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
09/531,285

Applicant(s)

Chen et al.

Examiner

John Vigushin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Mar 15, 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 37-42 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 37-42 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on Mar 20, 2000 is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- *See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☐ Notice of References Cited (PTO-892) 18) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 19) ☐ Notice of Informal Patent Application (PTO-152)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____ 20) ☐ Other:

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DETAILED ACTION

Response to Amendment

1. The present Office Action is responsive to Applicant's Amendment filed March 20, 2001 (Certificate of Mailing date: March 15, 2001). The Examiner acknowledges the amendments to the Specification and Claims 37-38, and the cancelation of Claim 43. Accordingly, Claims 37-42 remain pending in the instant amended Application.

Drawings

2. The drawings are objected to because:

In Fig. 4c, upward-pointing" arrow "82" should be pointing in the opposite (downward) direction and should have its element number changed from "82" to --84-- in accordance with Specification, p.11, lines 29-31.

In Fig. 5c, an arrow pointing the right and numbered --142-- should be added to the figure in accordance with Specification, p.15, lines 16-21.

Correction is required.

Specification

3. The disclosure is objected to because of the following informalities:

On p.11, line 22: "arrows" should be changed to --arrow--.

On p.11, line 25: "arrows" should be changed to --arrow--.

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On p.11, line 31: "arrows" should be changed to --arrow--.

Appropriate correction is required.

Rejections Based On Prior Art

4. The following reference was relied upon for the rejections hereinbelow:

Somaki et al. (US 5,641,113)*

*Already made of record in the instant Application.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371© of this title before the invention thereof by the applicant for patent.

6. Claims 37-42 are rejected under 35 U.S.C. 102(e) as being anticipated by Somaki et al.

As to Claim 37, Somaki et al. discloses a precursor element (carrier 11; Fig. 2A) including a first insulating layer (i.e., the layer of insulative material that forms the package, carrier 11, itself, which carries the semiconductor chip therein; col.4: 4-5) and a first conductor 12 attached to first insulating layer 11; first insulating layer 11 having a first surface (the surface carrying the circuit elements 12 and 13a), at least a portion of which defines a first surface plane; the precursor

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element surface including the first surface of the first insulating layer 11; placing a conducting member 13a onto the precursor element (i.e., onto the first insulating “layer” or “carrier” 11) and into electrical communication with first conductor 12 (Fig. 2B); conducting member (bump 13a) including a surface and protruding to an apex at a first level, said first level at least beyond the first surface plane (Fig. 2B); precursor element surface and conducting member 13a defining a major surface of a predetermined shape (Fig. 2B); placing a second insulating layer 14 including an adhesive (col.5: 5-26) onto substantially all of the major surface (Fig. 2C); second insulating layer 14 including oppositely disposed portions extending laterally from conducting member 13a along the first surface of the first insulating layer 11 (Fig. 2C); the second insulating layer 14 at said oppositely disposed portions extending to a second level, said first level (i.e., bump apex) beyond the second level (Fig. 2D); removing at least a portion of the second insulating layer 14 proximate the apex of conducting member 13a (Fig. 2D).

As to Claim 38, Somaki et al. discloses a first insulating layer (i.e., the layer of insulative material that forms the package, carrier 11, itself, which carries the semiconductor chip therein; col.4: 4-5) having at least one surface, a portion of which defines a first surface plane (Fig. 2A); at least one conductor 12 along at least a portion of the at least one surface (Fig. 2A); a conducting member 13a in communication with at least one conductor 12; conducting member 13a protruding to an apex at a first level, said first level beyond the first surface plane (Fig. 2B); conducting member 13a including a surface; said surface of the first insulating layer 11, the at least one conductor 12 and the surface of the conducting member 13a defining a major surface of

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a predetermined shape (Fig. 2B); a second insulating layer 14 (Fig. 2C) along at least a portion of the major surface whereby at least a portion of conducting member 13a remains exposed (Fig. 2D); second insulating layer 14 including portions extending laterally from the conducting member 13a along the first insulating layer 11 (Fig. 2D); the laterally extending portions extending from the first surface plane to a second level, said second level less than the first level (i.e., bump apex) wherein second insulating layer 14 includes an adhesive (col.5: 5-26).

As to Claim 39, Somaki et al. further discloses that the exposed portion of conducting member 13a is proximate the apex (Fig. 2D).

As to Claim 40, Somaki et al. further discloses that the exposed portion of conducting member 13a includes the surface of conducting member 13a (Fig. 2D).

As to Claim 41, Somaki et al. further discloses that at least a portion of the second insulating layer 14 conforms to the predetermined shape of the major surface (Fig. 2D).

As to Claim 42, Somaki et al. further discloses that the laterally extending portions of second insulating layer 14 extend from the first surface plane (defined by insulating layer 11) to a second plane at the second level (Fig. 2D).

Examiner's Remarks

7. In the Office Action of January 11, 2001, (Paper No. 5) the limitation of dependent Claim 43 (now canceled and incorporated in method Claim 37 and product Claim 38) was indicated as allowable subject matter, said limitation reciting that *the second insulating layer includes an*

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adhesive. However, in the process of reconsidering the instant amended Application, the Examiner revisited Somaki et al. (US 5,641,113; already of record in the file) and determined that Somaki et al. reads on Claims 37-42, including the newly incorporated limitation that the second insulating layer includes an adhesive. As a result, the Examiner regrets that the above-cited previous indication of allowability must be withdrawn in light of the new grounds of rejection.

Conclusion

8. Since the previous indication of allowable subject matter has been withdrawn by the Examiner in light of new grounds of rejection, the present Office Action is made NON-FINAL.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Vigushin whose telephone number is (703) 308-1205. The examiner can normally be reached on Monday to Friday from 8:30AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey Gaffin, can be reached on (703) 308-3301. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-7382.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

John B. Vigushin
Patent Examiner
April 12, 2001

